Selected Acquisition Report (SAR)

RCS: DD-A&T(Q&A)823-364

E-2D Advanced Hawkeye Aircraft (E-2D AHE)

As of FY 2017 President's Budget

Defense Acquisition Management
Information Retrieval
(DAMIR)

Table of Contents

Common Acronyms and Abbreviations for MDAP Programs

Acq O&M - Acquisition-Related Operations and Maintenance
ACAT - Acquisition Category
ADM - Acquisition Decision Memorandum
APB - Acquisition Program Baseline
APPN - Appropriation
APUC - Average Procurement Unit Cost
$B - Billions of Dollars
BA - Budget Authority/Budget Activity
Blk - Block
BY - Base Year
CAPE - Cost Assessment and Program Evaluation
CARD - Cost Analysis Requirements Description
CDD - Capability Development Document
CLIN - Contract Line Item Number
CPD - Capability Production Document
CY - Calendar Year
DAB - Defense Acquisition Board
DAE - Defense Acquisition Executive
DAMIR - Defense Acquisition Management Information Retrieval
DoD - Department of Defense
DSN - Defense Switched Network
EMD - Engineering and Manufacturing Development
EVM - Earned Value Management
FOC - Full Operational Capability
FMS - Foreign Military Sales
FRP - Full Rate Production
FY - Fiscal Year
FYDP - Future Years Defense Program
ICE - Independent Cost Estimate
IOC - Initial Operational Capability
Inc - Increment
JROC - Joint Requirements Oversight Council
$K - Thousands of Dollars
KPP - Key Performance Parameter
LRIP - Low Rate Initial Production
$M - Millions of Dollars
MDA - Milestone Decision Authority
MDAP - Major Defense Acquisition Program
MILCON - Military Construction
N/A - Not Applicable
O&M - Operations and Maintenance
ORD - Operational Requirements Document
OSD - Office of the Secretary of Defense
O&S - Operating and Support
PAUC - Program Acquisition Unit Cost

PB - President’s Budget
PE - Program Element
PEO - Program Executive Officer
PM - Program Manager
POE - Program Office Estimate
RDT&E - Research, Development, Test, and Evaluation
SAR - Selected Acquisition Report
SCP - Service Cost Position
TBD - To Be Determined
TY - Then Year
UCR - Unit Cost Reporting
U.S. - United States
USD(AT&L) - Under Secretary of Defense (Acquisition, Technology and Logistics)

Program Information

Program Name

E-2D Advanced Hawkeye Aircraft (E-2D AHE)

DoD Component

Navy

Responsible Office

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References

SAR Baseline (Production Estimate)

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated July 31, 2009

Approved APB

Navy Acquisition Executive (NAE) Approved Acquisition Program Baseline (APB) dated March 25, 2015

Mission and Description

The E-2D Advanced Hawkeye Aircraft (E-2D AHE) is a carrier based, all weather, multi-mission aircraft. The E-2D AHE mission is to provide premier airborne Battle Management Command and Control and Surveillance as part of the Naval and Joint Integrated Air and Missile Defense architecture including the Naval Integrated Fire Control-Counter Air capability. The centerpiece of the E-2D AHE is the APY-9 radar system. This radar system is designed specifically to provide significantly enhanced surveillance detection and tracking capability against advanced threat aircraft and cruise missile systems in the overland, littoral, and open ocean environments. Maritime surveillance is also maintained in the open ocean scenarios. The E-2D AHE provides early warning of hostile threats and provides the force with the right data to prosecute any engagement. Key capabilities along with the radar include the Identification Friend or Foe system and Electronic Support Measures for surveillance and combat identification, advanced mission processing capability to integrate all on-board sensor data and off-board information into a coherent tactical picture, and communications, data link, and sensor netting systems to share information across the battlespace. These capabilities allow the E-2D AHE to provide a significant contribution to execution of other mission areas such as Strike, Combat Search and Rescue, and Homeland Defense. As a part of the E-2D AHE radar modernization effort, the Navy also invested in integrating a full glass cockpit and full Communication Navigation Surveillance/Air Traffic Management capability. The glass cockpit will also provide the capability for the pilot or co-pilot to perform tactical mission functions.

Executive Summary

All E-2D AHE LRIP and the first two FRP aircraft have been delivered. The total Program of Record is 75 aircraft. The first Fleet Squadron Deployment occurred during March 11, 2015 through November 23, 2015 and the aircraft incorporated the Delta System/Software Configuration Build 1 (DSSC-1) which is the IOC hardware/software configuration. DSSC-1 Follow-On Operational Test and Evaluation was completed on May 29, 2015. DSSC-2, which incorporates prior test deficiency corrections and adds Dual Transmission Satellite Communication capability, commenced Developmental Test and Evaluation on May 28, 2015. The Material Support Date was achieved on October 1, 2015. The Japan Ministry of Defense signed a Letter of Offer and Acceptance (LOA) for one E-2D AHE on August 11, 2015. On November 12, 2015, the Japan E-2D AHE aircraft was placed on contract as a modification to the E-2D AHE Multi-Year Procurement contract utilizing a variation in quantity clause. The Japan Non Recurring Engineering contract was awarded on December 31, 2015. Japan is expected to procure an additional E-2D AHE via yearly LOAs at a rate of one per year for the next three years.

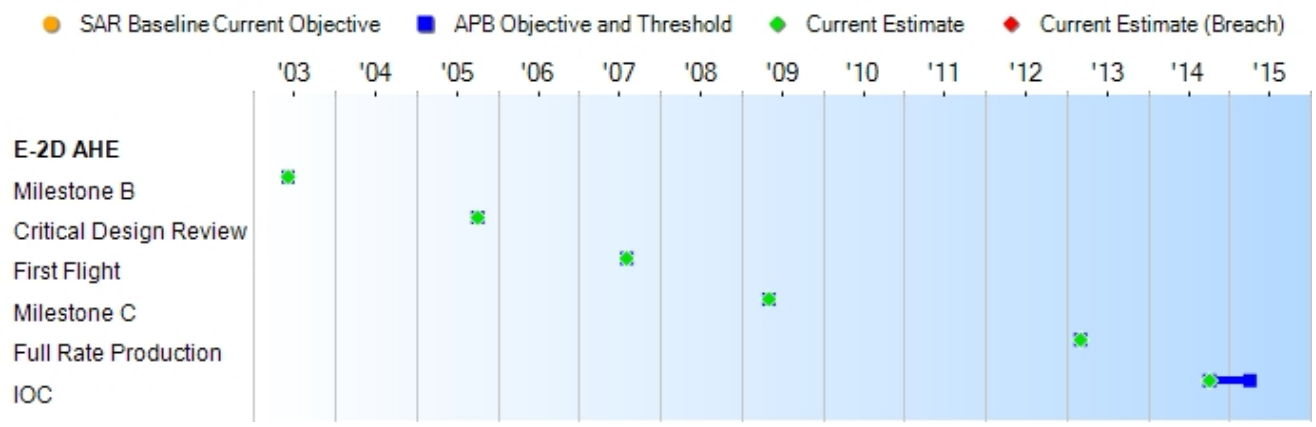
There are no significant software-related issues with this program at this time.

Threshold Breaches

APB Breaches		
Schedule		☐
Performance		☐
Cost	RDT&E	☐
	Procurement	☐
	MILCON	☐
	Acq O&M	☐
O&S Cost		☐
Unit Cost	PAUC	☐
	APUC	☐

Nunn-McCurdy Breaches		
Current UCR Baseline		
	PAUC	None
	APUC	None
Original UCR Baseline		
	PAUC	None
	APUC	None

Schedule



Schedule Events				
Events	**SAR Baseline Production Estimate**	**Current APB Production Objective/Threshold**		**Current Estimate**
Milestone B	May 2003	Jun 2003	Jun 2003	Jun 2003
Critical Design Review	Nov 2005	Oct 2005	Oct 2005	Oct 2005
First Flight	Aug 2007	Aug 2007	Aug 2007	Aug 2007
Milestone C	Mar 2009	May 2009	May 2009	May 2009
Full Rate Production	Dec 2012	Mar 2013	Mar 2013	Mar 2013
IOC	Oct 2014	Oct 2014	Apr 2015	Oct 2014

Change Explanations

None

Performance

Performance Characteristics				
SAR Baseline Production Estimate	**Current APB Production Objective/Threshold**		**Demonstrated Performance**	**Current Estimate**
Radar Ao				
=>0.98	=>0.98	=>0.85	0.89	>=0.89 (Ch-1)
Survivability - Safe Egress In Crash				
The E-2D AHE shall retain all equipment mounted inside the fuselage in its installed position in inhabited spaces for crash landing inertia load factors applied at the equipment center of gravity of 20g forward, parallel and downward in the cockpit along a single axis. The E-2D AHE escape hatches and doors shall allow egress subsequent to a 40g crash inertial load.	The E-2D AHE shall retain all equipment mounted inside the fuselage in its installed position in inhabited spaces for crash landing inertia load factors applied at the equipment center of gravity of 20g forward, parallel and downward in the cockpit along a single axis. The E-2D AHE escape hatches and doors shall allow egress subsequent to a 40g crash inertial load.	The E-2D AHE shall retain all equipment mounted inside the fuselage in its installed position in inhabited spaces for crash landing inertia load factors applied at the equipment center of gravity of 20g forward, parallel and downward in the cockpit along a single axis. The E-2D AHE escape hatches and doors shall allow egress subsequent to a 40g crash inertial load.	The E-2D AHE shall retain all equipment mounted inside the fuselage in its installed position in inhabited spaces for crash landing inertia load factors applied at the equipment center of gravity of 20g forward, parallel and downward in the cockpit along a single axis. The E-2D AHE escape hatches and doors shall allow egress subsequent to a 40g crash inertial load.	The E-2D AHE shall retain all equipment mounted inside the fuselage in its installed position in inhabited spaces for crash landing inertia load factors applied at the equipment center of gravity of 20g forward, parallel and downward in the cockpit along a single axis. The E-2D AHE escape hatches and doors shall allow egress subsequent to a 40g crash inertial load.
Manpower (Full Operational Capability - FY 2020)				
Aircrew Os =< 323 Maintenance Os/Es =< 34 / 1303 Support Os/Es =< 12 / 683 Training Os/Es =< 76 / 60	Aircrew Os =< 323 Maintenance Os/Es =< 34 / 1303 Support Os/Es =< 12 / 683 Training Os/Es =< 76 / 60	Aircrew Os =< 323 Maintenance Os/Es =< 34 / 1303 Support Os/Es =< 12 / 683 Training Os/Es =< 76 / 60	Aircrew Os =< 323 Maintenance Os/Es =< 34 / 1303 Support Os/Es =< 12 / 683 Training Os/Es =< 76 / 60	Aircrew Os =< 323 Maintenance Os/Es =< 34 / 1303 Support Os/Es =< 12 / 683 Training Os/Es =< 76 / 60
Unrefueled Time On Station				
=>2.0 hours at a station distance of 200nm	=>2.0 hours at a station distance of 200nm	=>2.0 hours at a station distance of 200nm	2.10 hours at a station distance of 200nm	2.10 hours at a station distance of 200nm
Flat Turn Service Ceiling				
=>25,000 feet above MSL at mission profile	=>25,000 feet above MSL at mission profile	=>25,000 feet above MSL at mission profile	25,600 feet above MSL at mission profile	25,600 feet above MSL at mission profile
Level Flight Airspeed				
=>300 knots true airspeed below	=>300 knots true airspeed below	=>300 knots true airspeed below	303.5 knots true airspeed below 18,000	303.5 knots true airspeed below

18,000 feet MSL	18,000 feet MSL	18,000 feet MSL	feet MSL	18,000 feet MSL
Network-Centric Military Operations (Network Readiness)				
The system must fully support execution of all operational activities identified in the applicable joint and system integrated architectures and the system must satisfy the technical requirements for Net -Centric military operations to include: (1) The DISR mandated GIG IT standards and profiles identified in the TV-1, (2) DISR mandated GIG KIPs identified in the KIP declaration table, (3) NCOW RM Enterprise Services (4) IA requirements include availability, integrity, authenticat -ion, confidential-ity, non-repudiation, and issuance of an ATO by the DAA (5) Operationally effective information exchanges; and MC - performance and IA attributes, data correctness, data availability, and consistent data processing specified in the applicable joint and system integrated architecture views	The system must fully support execution of all operational activities identified in the applicable joint and system integrated architectures and the system must satisfy the technical requirements for Net -Centric military operations to include: (1) The DISR mandated GIG IT standards and profiles identified in the TV-1, (2) DISR mandated GIG KIPs identified in the KIP declaration table, (3) NCOW RM Enterprise Services (4) IA requirements include availability, integrity, authenticat -ion, confidential-ity, non-repudiation, and issuance of an ATO by the DAA (5) Operationally effective information exchanges; and MC - performance and IA attributes, data correctness, data availability, and consistent data processing specified in the applicable joint and system integrated architecture views	The system must fully support execution of joint critical operational activities identified in the applicable joint and system integrated architectures and the system must satisfy the technical requirements for transition to Net-Centric military operations to include: (1) The DISR mandated GIG IT standards and profiles identified in the TV-1 (2) DISR mandated GIG KIPs identified in the KIP declaration table (3) NCOW RM Enterprise Services (4) IA requirements including availability integrity, authenticat -ion, confidential-ity, non-repudiation, and issuance of an IATO by the DAA (5) Operationally effective information exchanges and MC-performance and IA attributes, data availability, and consistent data processing specified in the applicable joint and system integrated architecture views	The system must fully support execution of joint critical operational activities identified in the applicable joint and system integrated architectures and the system must satisfy the technical requirements for transition to Net-Centric military operations to include: (1) The DISR mandated GIG IT standards and profiles identified in the TV-1 (2) DISR mandated GIG KIPs identified in the KIP declaration table (3) NCOW RM Enterprise Services (4) IA requirements including availability integrity, authentication, confidentiality, nonrepudiation, and issuance of an IATO by the DAA (5) Operationally effective information exchanges and MC-performance and IA attributes, data availability, and consistent data processing specified in the applicable joint and system integrated architecture views	The system must fully support execution of joint critical operational activities identified in the applicable joint and system integrated architectures and the system must satisfy the technical requirements for transition to Net-Centric military operations to include: (1) The DISR mandated GIG IT standards and profiles identified in the TV-1 (2) DISR mandated GIG KIPs identified in the KIP declaration table (3) NCOW RM Enterprise Services (4) IA requirements including availability integrity, authentication, confidentiality, nonrepudiation, and issuance of an IATO by the DAA (5) Operationally effective information exchanges and MC-performance and IA attributes, data availability, and consistent data processing specified in the applicable joint and system integrated architecture views

Classified Performance information is provided in the classified annex to this submission.

Requirements Reference

CDD dated March 3, 2009

Change Explanations

(Ch-1) The current estimate for the Radar Ao KPP has changed from =>0.85 to =>0.89 due to new test results.

Acronyms and Abbreviations

Ao - Operational Availability
ATO - Authorization to Operate
DAA - Designated Approval Authority
DISR - DoD Information Technology Standards and Profile Registry
Es - Enlisted
g - gravity
GIG - Global Information Grid
IA - Information Assurance
IATO - Interim Authorization to Operate
IT - Information Technology
KIPs - Key Intelligence Profiles
MC - Mission Critical
MSL - Mean Sea Level
NCOW RM - Net-Centric Operations and Warfare Reference Model
nm - nautical mile
Os - Officers
TV-1 - Technical View 1

Track to Budget

General Notes

APPN 1506 Line Item 019500 and APPN 1506 Line Item 060510 are shared with the E-2C Reproduction program, which was funded through FY 2007 and no longer requires Acquisition Category reporting as it is over 90% expended. E-2D AHE procurement funding began in FY 2008, as shown in the funding summary.

RDT&E PE 0604234N, Project Unit 9999 not included. FY 2016 Congressional Add is not within scope of approved Program of Record.

RDT&E

Appn		BA	PE
Navy	1319	05	0604234N

Project	Name
3051	E-2D Adv Hawkeye

Procurement

Appn		BA	PE
Navy	1506	01	0204152N

Line Item	Name	
0195	E-2D Adv Hawkeye	(Shared)

Appn		BA	PE
Navy	1506	06	0204152N

Line Item	Name	
0605	Spares and Repair Parts	(Shared)

MILCON

Appn		BA	PE
Navy	1205	01	0703676N

Project	Name	
69232565	E-2D Hangar/Apron Modifications at Pt. Mugu	(Sunk)

Appn		BA	PE
Navy	1205	01	0805976N

Project	Name	
62613603	Facilities Restoration and Mod-Training E-2D Operational Trainer Complex	(Sunk)

Appn		BA	PE
Navy	1205	01	0815976N

Project	Name		
60495420	Facilities New Footprint - Trainers NAS Fallon Training Facility, E-2D portion	(Shared)	(Sunk)

Cost and Funding

Cost Summary

Total Acquisition Cost							
Appropriation	BY 2009 $M			BY 2009 $M	TY $M		
	SAR Baseline Production Estimate	Current APB Production Objective/Threshold		Current Estimate	SAR Baseline Production Estimate	Current APB Production Objective	Current Estimate
RDT&E	4140.0	5674.4	6241.8	5724.9	4014.3	5803.1	5852.9
Procurement	13281.9	12932.0	14225.2	13741.7	14968.5	15045.0	15963.2
Flyaway	--	--	--	11439.9	--	--	13277.1
Recurring	--	--	--	10686.3	--	--	12381.9
Non Recurring	--	--	--	753.6	--	--	895.2
Support	--	--	--	2301.8	--	--	2686.1
Other Support	--	--	--	2004.0	--	--	2357.8
Initial Spares	--	--	--	297.8	--	--	328.3
MILCON	46.7	67.2	73.9	67.5	48.6	73.6	73.6
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	17468.6	18673.6	N/A	19534.1	19031.4	20921.7	21889.7

Current APB Cost Estimate Reference

POE dated February 02, 2015

Confidence Level

Confidence Level of cost estimate for current APB: 50%

The ICE to support the E-2D AHE FRP Decision Review, like all previous CAPE estimates, is built upon a product-oriented work breakdown structure; is based on historical actual cost information to the mazimum extent possible; and, most importantly, is based on conservative assumptions that are consistent with actual demonstrated contractor and government performance for a series of acquisition programs in which the Department of Defense has been successful.

It is difficult to calculate mathematically the precise confidence levels associated with life-cycle cost estimates prepared for MDAPs. Based on the rigor in methods used in building estimates, the strong adherence to the collection and use of historical cost information, and the review of applied assumptions, we project that it is about equally likely that the estimate will prove too low or too high for execution of the program described.

Total Quantity			
Quantity	**SAR Baseline Production Estimate**	**Current APB Production**	**Current Estimate**
RDT&E	5	5	5
Procurement	70	70	70
Total	75	75	75

Cost and Funding

Funding Summary

Appropriation Summary									
FY 2017 President's Budget / December 2015 SAR (TY$ M)									
Appropriation	Prior	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	To Complete	Total
RDT&E	4387.3	209.1	363.8	290.4	216.9	185.4	168.7	31.3	5852.9
Procurement	6776.6	1051.8	1061.6	832.1	824.6	1023.1	1148.6	3244.8	15963.2
MILCON	45.4	28.2	0.0	0.0	0.0	0.0	0.0	0.0	73.6
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PB 2017 Total	11209.3	1289.1	1425.4	1122.5	1041.5	1208.5	1317.3	3276.1	21889.7
PB 2016 Total	11212.8	1361.1	1384.4	1121.5	1178.0	1204.8	1047.4	3310.7	21820.7
Delta	-3.5	-72.0	41.0	1.0	-136.5	3.7	269.9	-34.6	69.0

Funding Notes

RDT&E PE 0604234N, Project Unit 9999 not included. FY 2016 Congressional Add is not within scope of approved Program of Record.

Quantity Summary										
FY 2017 President's Budget / December 2015 SAR (TY$ M)										
Quantity	Undistributed	Prior	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	To Complete	Total
Development	5	0	0	0	0	0	0	0	0	5
Production	0	30	5	6	5	3	4	5	12	70
PB 2017 Total	5	30	5	6	5	3	4	5	12	75
PB 2016 Total	5	30	5	6	5	4	4	4	12	75
Delta	0	0	0	0	0	-1	0	1	0	0

Cost and Funding

Annual Funding By Appropriation

Annual Funding 1319 | RDT&E | Research, Development, Test, and Evaluation, Navy							
Fiscal Year	Quantity	TY $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2002	--	--	--	--	--	--	73.2
2003	--	--	--	--	--	--	105.8
2004	--	--	--	--	--	--	325.5
2005	--	--	--	--	--	--	541.7
2006	--	--	--	--	--	--	595.6
2007	--	--	--	--	--	--	480.8
2008	--	--	--	--	--	--	784.8
2009	--	--	--	--	--	--	467.9
2010	--	--	--	--	--	--	345.8
2011	--	--	--	--	--	--	167.8
2012	--	--	--	--	--	--	108.5
2013	--	--	--	--	--	--	115.7
2014	--	--	--	--	--	--	103.0
2015	--	--	--	--	--	--	171.2
2016	--	--	--	--	--	--	209.1
2017	--	--	--	--	--	--	363.8
2018	--	--	--	--	--	--	290.4
2019	--	--	--	--	--	--	216.9
2020	--	--	--	--	--	--	185.4
2021	--	--	--	--	--	--	168.7
2022	--	--	--	--	--	--	31.3
Subtotal	5	--	--	--	--	--	5852.9

Annual Funding 1319 | RDT&E | Research, Development, Test, and Evaluation, Navy							
Fiscal Year	Quantity	BY 2009 $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2002	--	--	--	--	--	--	84.7
2003	--	--	--	--	--	--	120.6
2004	--	--	--	--	--	--	360.9
2005	--	--	--	--	--	--	585.2
2006	--	--	--	--	--	--	624.0
2007	--	--	--	--	--	--	491.7
2008	--	--	--	--	--	--	788.2
2009	--	--	--	--	--	--	464.0
2010	--	--	--	--	--	--	337.8
2011	--	--	--	--	--	--	160.1
2012	--	--	--	--	--	--	101.8
2013	--	--	--	--	--	--	107.5
2014	--	--	--	--	--	--	94.3
2015	--	--	--	--	--	--	154.8
2016	--	--	--	--	--	--	186.1
2017	--	--	--	--	--	--	318.0
2018	--	--	--	--	--	--	249.0
2019	--	--	--	--	--	--	182.3
2020	--	--	--	--	--	--	152.8
2021	--	--	--	--	--	--	136.3
2022	--	--	--	--	--	--	24.8
Subtotal	5	--	--	--	--	--	5724.9

Annual Funding 1506 | Procurement | Aircraft Procurement, Navy							
Fiscal Year	Quantity	TY $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2008	--	72.2	--	--	72.2	--	72.2
2009	2	404.5	--	--	404.5	67.6	472.1
2010	3	584.6	--	33.7	618.3	161.5	779.8
2011	5	848.6	--	73.9	922.5	202.9	1125.4
2012	5	852.8	--	37.4	890.2	131.1	1021.3
2013	5	772.4	--	42.5	814.9	119.2	934.1
2014	5	979.4	--	47.6	1027.0	188.1	1215.1
2015	5	908.3	--	64.0	972.3	184.3	1156.6
2016	5	803.7	--	51.8	855.5	196.3	1051.8
2017	6	807.0	--	52.8	859.8	201.8	1061.6
2018	5	602.7	--	53.8	656.5	175.6	832.1
2019	3	612.2	--	54.9	667.1	157.5	824.6
2020	4	800.7	--	56.0	856.7	166.4	1023.1
2021	5	941.6	--	57.1	998.7	149.9	1148.6
2022	5	996.6	--	58.3	1054.9	185.6	1240.5
2023	5	939.0	--	69.5	1008.5	121.3	1129.8
2024	2	455.6	--	93.8	549.4	115.3	664.7
2025	--	--	--	48.1	48.1	161.7	209.8
Subtotal	70	12381.9	--	895.2	13277.1	2686.1	15963.2

Annual Funding 1506 | Procurement | Aircraft Procurement, Navy							
Fiscal Year	Quantity	BY 2009 $M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2008	--	71.8	--	--	71.8	--	71.8
2009	2	396.6	--	--	396.6	66.3	462.9
2010	3	561.4	--	32.4	593.8	155.1	748.9
2011	5	799.1	--	69.6	868.7	191.1	1059.8
2012	5	791.7	--	34.7	826.4	121.8	948.2
2013	5	709.5	--	39.0	748.5	109.5	858.0
2014	5	888.0	--	43.2	931.2	170.6	1101.8
2015	5	811.4	--	57.2	868.6	164.6	1033.2
2016	5	705.7	--	45.5	751.2	172.4	923.6
2017	6	695.4	--	45.5	740.9	173.9	914.8
2018	5	509.4	--	45.5	554.9	148.3	703.2
2019	3	507.2	--	45.5	552.7	130.5	683.2
2020	4	650.4	--	45.5	695.9	135.2	831.1
2021	5	749.9	--	45.5	795.4	119.3	914.7
2022	5	778.1	--	45.5	823.6	144.9	968.5
2023	5	718.8	--	53.2	772.0	92.8	864.8
2024	2	341.9	--	70.4	412.3	86.5	498.8
2025	--	--	--	35.4	35.4	119.0	154.4
Subtotal	70	10686.3	--	753.6	11439.9	2301.8	13741.7

Cost Quantity Information 1506 | Procurement | Aircraft Procurement, Navy		
Fiscal Year	**Quantity**	**End Item Recurring Flyaway (Aligned With Quantity) BY 2009 $M**
2008	--	--
2009	2	414.9
2010	3	524.0
2011	5	778.9
2012	5	756.2
2013	5	743.3
2014	5	762.0
2015	5	848.7
2016	5	735.9
2017	6	759.2
2018	5	549.7
2019	3	486.5
2020	4	633.2
2021	5	764.5
2022	5	762.1
2023	5	771.1
2024	2	396.1
2025	--	--
Subtotal	70	10686.3

Annual Funding 1205 | MILCON | Military Construction, Navy and Marine Corps	
Fiscal Year	**TY $M**
	Total Program
2008	11.5
2009	--
2010	16.8
2011	--
2012	15.4
2013	--
2014	--
2015	1.7
2016	28.2
Subtotal	73.6

Annual Funding 1205 | MILCON | Military Construction, Navy and Marine Corps	
Fiscal Year	**BY 2009 $M**
	Total Program
2008	11.4
2009	--
2010	16.0
2011	--
2012	14.2
2013	--
2014	--
2015	1.5
2016	24.4
Subtotal	67.5

Low Rate Initial Production

Item	Initial LRIP Decision	Current Total LRIP
Approval Date	6/13/2003	4/3/2011
Approved Quantity	22	15
Reference	Milestone B ADM	LRIP Lots 3 and 4 ADM
Start Year	2009	2009
End Year	2012	2012

The Current Total LRIP Quantity is more than 10% of the total production quantity due to 15 aircraft being the minimum to maintain the industrial base and ensure successful transition to FRP.

The 15 planned LRIP aircraft (including one FY 2011 supplemental) represent 20% of the total quantity. The reduction in LRIP quantities is due to the production quantity ramp changes.

Foreign Military Sales

Country	Date of Sale	Quantity	Total Cost $M	Description
Japan	8/11/2015	1	540.5	FMS Case JA-P-SCJ, E-2D Advanced Hawkeye, Non-Recurring Engineering to support Japan Unique Wet-Outer Wing Panel Configuration, Spares, Support Equipment and Product Support.

Notes

Nuclear Costs

None

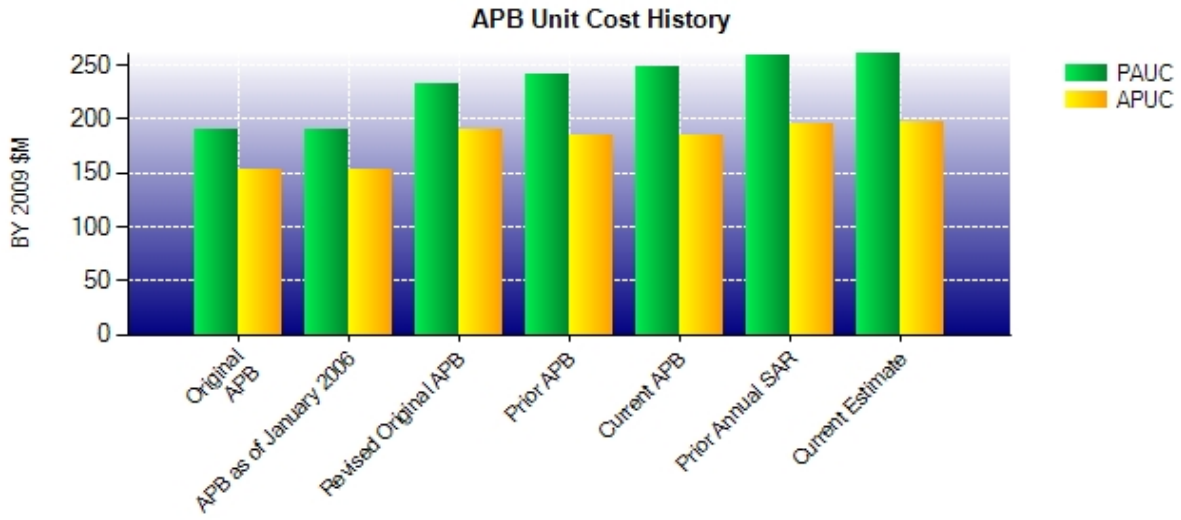
Unit Cost

Unit Cost Report

Item	BY 2009 $M Current UCR Baseline (Mar 2015 APB)	BY 2009 $M Current Estimate (Dec 2015 SAR)	% Change
Program Acquisition Unit Cost			
Cost	18673.6	19534.1	
Quantity	75	75	
Unit Cost	248.981	260.455	+4.61
Average Procurement Unit Cost			
Cost	12932.0	13741.7	
Quantity	70	70	
Unit Cost	184.743	196.310	+6.26

Item	BY 2009 $M Revised Original UCR Baseline (Jul 2009 APB)	BY 2009 $M Current Estimate (Dec 2015 SAR)	% Change
Program Acquisition Unit Cost			
Cost	17468.6	19534.1	
Quantity	75	75	
Unit Cost	232.915	260.455	+11.82
Average Procurement Unit Cost			
Cost	13281.9	13741.7	
Quantity	70	70	
Unit Cost	189.741	196.310	+3.46

Unit Cost History



Item	Date	BY 2009 $M		TY $M	
		PAUC	APUC	PAUC	APUC
Original APB	Jun 2003	189.977	152.732	199.760	166.551
APB as of January 2006	Jun 2003	189.977	152.732	199.760	166.551
Revised Original APB	Jul 2009	232.915	189.741	253.752	213.836
Prior APB	Apr 2013	241.280	184.743	269.981	214.929
Current APB	Mar 2015	248.981	184.743	278.956	214.929
Prior Annual SAR	Dec 2014	258.515	194.957	290.943	227.771
Current Estimate	Dec 2015	260.455	196.310	291.863	228.046

SAR Unit Cost History

Initial SAR Baseline to Current SAR Baseline (TY $M)									
Initial PAUC Development Estimate	Changes								PAUC Production Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
199.760	5.871	0.000	3.025	8.235	28.608	0.000	8.253	53.992	253.752

Current SAR Baseline to Current Estimate (TY $M)									
PAUC Production Estimate	Changes								PAUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
253.752	-1.043	0.000	24.459	17.961	-11.595	0.000	8.329	38.111	291.863

Initial SAR Baseline to Current SAR Baseline (TY $M)									
Initial APUC Development Estimate	Changes								APUC Production Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
166.551	4.414	-0.572	3.241	4.910	27.393	0.000	7.899	47.285	213.836

Current SAR Baseline to Current Estimate (TY $M)									
APUC Production Estimate	Changes								APUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
213.836	-0.779	0.000	26.204	2.433	-22.573	0.000	8.924	14.209	228.046

SAR Baseline History				
Item	SAR Planning Estimate	SAR Development Estimate	SAR Production Estimate	Current Estimate
Milestone A	N/A	N/A	N/A	N/A
Milestone B	N/A	May 2003	May 2003	Jun 2003
Milestone C	N/A	Mar 2009	Mar 2009	May 2009
IOC	N/A	Apr 2011	Oct 2014	Oct 2014
Total Cost (TY $M)	N/A	14982.0	19031.4	21889.7
Total Quantity	N/A	75	75	75
PAUC	N/A	199.760	253.752	291.863

Cost Variance

Summary TY $M				
Item	**RDT&E**	**Procurement**	**MILCON**	**Total**
SAR Baseline (Production Estimate)	4014.3	14968.5	48.6	19031.4
Previous Changes				
Economic	-14.1	+40.9	+0.5	+27.3
Quantity	--	--	--	--
Schedule	--	+1744.0	--	+1744.0
Engineering	+1146.9	+144.5	+29.9	+1321.3
Estimating	+656.0	-1612.4	-5.4	-961.8
Other	--	--	--	--
Support	--	+658.5	--	+658.5
Subtotal	+1788.8	+975.5	+25.0	+2789.3
Current Changes				
Economic	-9.8	-95.4	-0.3	-105.5
Quantity	--	--	--	--
Schedule	--	+90.3	--	+90.3
Engineering	--	+25.8	--	+25.8
Estimating	+59.6	+32.3	+0.3	+92.2
Other	--	--	--	--
Support	--	-33.8	--	-33.8
Subtotal	+49.8	+19.2	--	+69.0
Total Changes	+1838.6	+994.7	+25.0	+2858.3
CE - Cost Variance	5852.9	15963.2	73.6	21889.7
CE - Cost & Funding	5852.9	15963.2	73.6	21889.7

Summary BY 2009 $M				
Item	**RDT&E**	**Procurement**	**MILCON**	**Total**
SAR Baseline (Production Estimate)	4140.0	13281.9	46.7	17468.6
Previous Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	+1121.7	--	+1121.7
Engineering	+984.2	+124.2	+25.7	+1134.1
Estimating	+550.2	-1357.9	-5.2	-812.9
Other	--	--	--	--
Support	--	+477.1	--	+477.1
Subtotal	+1534.4	+365.1	+20.5	+1920.0
Current Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	+77.3	--	+77.3
Engineering	--	+20.3	--	+20.3
Estimating	+50.5	+26.9	+0.3	+77.7
Other	--	--	--	--
Support	--	-29.8	--	-29.8
Subtotal	+50.5	+94.7	+0.3	+145.5
Total Changes	+1584.9	+459.8	+20.8	+2065.5
CE - Cost Variance	5724.9	13741.7	67.5	19534.1
CE - Cost & Funding	5724.9	13741.7	67.5	19534.1

Previous Estimate: December 2014

RDT&E	$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-9.8
Increase in funding to support Tactical Targeting Network Technology, Multifunctional Information Distribution System Joint Tactical Terminal Radio, Beyond Line of Sight Secret Internet Protocol Router (SIPR) chat, Crypto-Modernization/Frequency Re-Mapping, Integrated Fire Control, Advanced Mid-Term Interoperability Improvement Program, and restore Naval Integrated Fire Control-Counter Air wholeness. (Estimating)	+142.7	+167.1
Increase in funding for ALQ-217 Electronic Support Measures. (Estimating)	+131.9	+156.7
Refinement of estimate to reflect actual funding adjustments of FY 2021 into the FYDP. (Estimating)	+68.2	+84.4
Revised estimate to reflect application of new outyear escalation indices. (Estimating)	+7.1	+8.4
Adjustment for current and prior escalation. (Estimating)	+2.8	+3.1
Revised Estimate due to decrease in funding for Counter Electronic Attack Increment II and Sensor Netting Phase II. (Estimating)	-133.3	-165.2
Revised Estimate due to decrease in funding for Net-Enabled Weapons J11, Stores Performance Assessment Requested Quality, and Navigation Warfare. (Estimating)	-96.7	-113.5
Revised Estimate due to Congressional adjustments in FY 2016 delaying new start capabilities to FY 2017. (Estimating)	-56.1	-63.0
Revised Estimate to reflect Naval Air Warfare Center rate adjustments. (Estimating)	-15.6	-17.9
Revised Estimate to reflect DoD internal adjustments. (Estimating)	-0.5	-0.5
RDT&E Subtotal	+50.5	+49.8

Procurement	$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-95.4
Schedule variance resulting from re-phasing of aircraft (FY 2015 +1, FY 2019 -2, FY 2020 -1, FY2024 +2). (Schedule)	0.0	-4.0
Additional schedule variance due to movement of multiple aircraft from FY 2015 - FY 2024. (Schedule)	+77.3	+94.3
Increased funding for ALQ-217 Electronic Support Measures Receiver/Processor upgrade. (Engineering)	+20.3	+25.8
Revised estimate to reflect application of outyear escalation indices. (Estimating)	+25.7	+31.7
Revised Estimate for Northrop Grumman Aerospace Sector labor rates. (Estimating)	+19.8	+25.5
Adjustment for current and prior escalation. (Estimating)	+20.1	+22.5
Revised estimate to reflect actuals. (Estimating)	-38.7	-47.4
Adjustment for current and prior escalation. (Support)	+4.2	+4.6
Decrease in Other Support due to revised estimate to reflect actuals, reduced Navy Working Capital Funds labor rates, and congressional reduction to support funding. (Support)	-48.1	-53.8
Increase in Initial Spares due to additional spare engine procurements. (Support)	+14.1	+15.4
Procurement Subtotal	+94.7	+19.2

MILCON	$M

Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-0.3
Adjustment for current and prior escalation. (Estimating)	+0.3	+0.3
MILCON Subtotal	+0.3	0.0

Contracts

Contract Identification

Appropriation: Procurement
Contract Name: LRIP Lot 4
Contractor: Northrop Grumman Systems Corporation
Contractor Location: 2000 West NASA Boulevard
Melbourne, FL 32904
Contract Number: N00019-10-C-0044/5
Contract Type: Firm Fixed Price (FFP)
Award Date: April 13, 2011
Definitization Date: January 24, 2012

Contract Price							
Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
94.6	N/A	0	787.4	N/A	5	787.4	787.4

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to this contract being awarded on April 13, 2011 as an advanced acquisition contract for the LRIP Lot 4 as a Not to Exceed contract in the amount of $94.6M. The contract was definitized on January 24, 2012 and transitioned to a Firm Fixed Price contract for the procurement of five aircraft with the current contract value of $787.4M.

Cost and Schedule Variance Explanations

Cost and Schedule Variance reporting is not required on this (FFP) contract.

Notes

This contract is more than 90% complete; therefore, this is the final report for this contract.

Contract Identification

Appropriation: Procurement
Contract Name: FRP Lot 1
Contractor: Northrop Grumman Systems Corporation
Contractor Location: 2000 West NASA Boulevard
Melborne, FL 32904
Contract Number: N00019-12-C-0063/5
Contract Type: Firm Fixed Price (FFP)
Award Date: February 01, 2012
Definitization Date: July 24, 2013

Contract Price							
Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
157.9	N/A	0	828.3	N/A	5	828.3	828.3

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to this contract being awarded on February 1, 2012 as an advanced acquisition for the FRP Lot 1 as a Not to Exceed contract in the amount of $157.9M. The contract was definitized on July 24, 2013 and transitioned to a Firm Fixed Price contract for the procurement of five aircraft with a current contract value of $828.3M.

Cost and Schedule Variance Explanations

Cost and Schedule Variance reporting is not required on this (FFP) contract.

Contract Identification

Appropriation: RDT&E

Contract Name: E-2D Aerial Refueling

Contractor: Northrop Grumman Systems Corporation

Contractor Location: 2000 West NASA Boulevard
Melbourne, FL 32904

Contract Number: N00019-13-C-0135/1

Contract Type: Cost Plus Incentive Fee (CPIF)

Award Date: September 27, 2013

Definitization Date: September 27, 2013

Contract Price							
Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
226.7	N/A	0	226.7	N/A	0	204.2	211.0

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (12/31/2015)	-0.8	+0.7
Previous Cumulative Variances	-2.9	-1.8
Net Change	+2.1	+2.5

Cost and Schedule Variance Explanations

The favorable net change in the cost variance is due to savings associated with a materials account and the offset of labor rate adjustments and the allocation accounts in prior months.

The favorable net change in the schedule variance is due to supplier milestones completing early.

Contract Identification

Appropriation: Procurement

Contract Name: Multi-Year Procurement (FRP Lots 2-6)

Contractor: Northrop Grumman Systems Corporation

Contractor Location: 2000 West NASA Boulevard
Melbourne, FL 32904

Contract Number: N00019-13-C-9999/1

Contract Type: Fixed Price Incentive(Firm Target) (FPIF)

Award Date: May 17, 2013

Definitization Date: June 30, 2014

Contract Price							
Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
113.7	N/A	0	4392.3	4392.3	26	4392.3	4392.3

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to this contract being awarded on May 17, 2013 as an advanced acquisition contract for the FRP Lot 2 as a Not To Exceed contract in the amount of $113.7M. On July 31, 2013, an additional $9.3M contract modification was made. This contract was definitized on June 30, 2014 and transitioned to Fixed Price Incentive Firm Contract for the procurement of 25 aircraft with a current contract value of $3906.7M. On November 12, 2015, a $140.0M modification was awarded for one E-2D aircraft for the government of Japan and on December 30, 2015, a $286.0M modification was awarded for non-recurring engineering and recurring efforts to support the production and delivery of this E-2D AHE aircraft for the government of Japan under a FMS program.

Cost and Schedule Variance Explanations

Cost and Schedule Variance reporting is not required on this (FPIF) contract.

General Contract Variance Explanation

Cost and schedule variances are not reported for this contract because an earned value management waiver was granted by the Deputy Assistant Secretary of the Navy for Acquisition and Procurement on May 12, 2014 as delegated by the Assistant Secretary of the Navy for Research, Development, and Acquisition due to the fact that the E-2D AHE airframe is being produced in a mature FRP environment, with a prime contractor displaying a long-term history of consistently meeting delivery schedules, at or below contract targets.

Contract Identification

Appropriation: RDT&E

Contract Name: Full Scale Fatigue Test

Contractor: Northrop Grumman Systems Corporation

Contractor Location: 2000 West NASA Boulevard
Melbourne, FL 32904

Contract Number: N00019-14-C-0036/1

Contract Type: Cost Plus Fixed Fee (CPFF)

Award Date: July 07, 2014

Definitization Date: July 07, 2014

Contract Price							
Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
52.4	N/A	0	59.5	N/A	0	50.9	54.7

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to the additional scope of Wing Center Section Fatigue Article Testing and the exercise of a repair option.

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (12/31/2015)	+0.7	0.0
Previous Cumulative Variances	+0.2	0.0
Net Change	+0.5	+0.0

Cost and Schedule Variance Explanations

The favorable net change in the cost variance is due to labor and material efficiencies to review test data.

Contract Identification

Appropriation: RDT&E
Contract Name: Post IOC Capibilities
Contractor: Northrop Grumman systems Corporation
Contractor Location: 2000 West NASA Boulevard
Melbourne, FL 32904
Contract Number: N00019-15-C-0091/1
Contract Type: Cost Plus Incentive Fee (CPIF)
Award Date: April 06, 2015
Definitization Date: April 06, 2015

Contract Price							
Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
146.7	N/A	N/A	146.7	N/A	N/A	121.3	139.2

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (12/31/2015)	+1.5	-0.4
Previous Cumulative Variances	--	--
Net Change	+1.5	-0.4

Cost and Schedule Variance Explanations

The favorable cumulative cost variance is due to labor efficiencies within the Program Management accounts.

The unfavorable cumulative schedule variance is due to minor delays in receipt of supplier invoices. This schedule variance is likely to remain in this area until the work scope is complete and all invoices have been received.

Notes

This is the first time this contract is being reported.

Deliveries and Expenditures

Deliveries				
Delivered to Date	Planned to Date	Actual to Date	Total Quantity	Percent Delivered
Development	5	5	5	100.00%
Production	17	17	70	24.29%
Total Program Quantity Delivered	22	22	75	29.33%

Expended and Appropriated (TY $M)			
Total Acquisition Cost	21889.7	Years Appropriated	15
Expended to Date	9271.1	Percent Years Appropriated	62.50%
Percent Expended	42.35%	Appropriated to Date	12498.4
Total Funding Years	24	Percent Appropriated	57.10%

The above data is current as of February 09, 2016.

Operating and Support Cost

Cost Estimate Details

Date of Estimate:	February 23, 2016
Source of Estimate:	POE
Quantity to Sustain:	71
Unit of Measure:	Aircraft
Service Life per Unit:	20.00 Years
Fiscal Years in Service:	FY 2011 - FY 2046

Inflation Indices Utilized: FY 2016 OSD rates

Flight Hours per Aircraft per Month: 40 (assumes no change in the Concept of Operations associated with the Aerial Refueling effort)
Number of Aircraft per Carrier AEW Squadron: 5
Total Number of Primary Authorized Aircraft (PAA): 66
- Ten 5 aircraft Carrier Airborne Early Warning squadrons
- One 12 aircraft Fleet Replacement Squadron (FRS)
- 2 aircraft at Air Test and Evaluation Squadron One (VX-1)*
- 2 aircraft at Naval Strike Air Warfare Center (NSAWC)*

Aircraft Flight Hours Life Limit: 9,600
Pipeline Rate: 8%
Attrition Rate: 0%
Total Operating Flight Hours: 583,039
Total Operating Aircraft Years: 1,324

*PAA beyond Primary Mission Aircraft Authorized (PMAA) and FRS aircraft are typically not included in Naval Air Systems Command (NAVAIR) AIR 4.2 O&S cost estimates; however, PAA for VX-1 and NSAWC have been included in the E-2D AHE O&S cost estimate. The O&S cost estimate excludes the four PAA for the NAVAIR-owned aircraft, which are not fleet-owned assets.

Sustainment Strategy

The E-2D AHE initial sustainment concept for E-2D AHE unique parts is Interim Contractor Support through Material Support Date (MSD) with common systems supported organically. For the period of MSD (1st Quarter FY 2016) through Navy Support Date (4th Quarter FY 2019), Naval Supply Systems Command Weapons System Support will support E-2D AHE unique systems through conventional and/or performance-based repair contracts with Original Equipment Manufacturers. With few exceptions, E-2D AHE unique systems have been designated as Core Capabilities and the program is pursuing the establishment of organic capabilities to comply with the U.S. Code Title 10 requirements. As these capabilities are established, business case analyses will be conducted to determine the best value sustainment strategies, whether it is organic or public-private partnership.

The Operating Inventory Utilization per Unit is 40 Flight Hours per Month.

Antecedent Information

The antecedent program is the E-2C. Annual costs for the antecedent program are based upon a three-year average of Naval Visibility and Management of Operating and Support Costs (VAMOSC) data from FY 2010 - FY 2012 where costs for the three years are summed and then divided by the sum of aircraft count for the three years. The average number of aircraft in the three-year VAMOSC dataset is 58.33. Since Naval VAMOSC does not capture Indirect Support costs, the E-2C Indirect Support cost is calculated by multiplying the E-2C Unit-Level Manpower by the ratio of E-2D AHE Indirect Support to E-2D AHE Unit-Level Manpower.

For comparison purposes, the Total O&S Cost is the product of the Antecedent's Average Annual Cost per Unit and the Operating Aircraft Years of the E-2D AHE.

Annual O&S Costs BY2009 $M		
Cost Element	**E-2D AHE Average Annual Cost Per Aircraft**	**E-2C (Antecedent) Average Annual Cost Per Aircraft**
Unit-Level Manpower	2.769	2.700
Unit Operations	0.509	0.415
Maintenance	6.322	3.535
Sustaining Support	0.606	0.207
Continuing System Improvements	1.502	1.034
Indirect Support	0.990	0.966
Other	--	0.000
Total	12.698	8.857

The flight hour utilization rate for E-2C is 30.8 hours per aircraft per month, which contributes to the delta in Unit Operations and Maintenance cost between the E-2D AHE and E-2C.

Item	Total O&S Cost $M			
	E-2D AHE			E-2C (Antecedent)
	Current Production APB Objective/Threshold		Current Estimate	
Base Year	17334.7	19068.2	16806.1	11724.6
Then Year	23824.4	N/A	24854.8	N/A

.

Equation to Translate Annual Cost to Total Cost

Average Annual Aircraft O&S Cost = Total O&S Cost / Total Operating Aircraft Years

$12.698 (BY 2009 $M) = $16806.1 (BY 2009 $M)/1324

O&S Cost Variance		
Category	**BY 2009 $M**	**Change Explanations**
Prior SAR Total O&S Estimates - Dec 2014 SAR	16559.5	
Programmatic/Planning Factors	299.8	Update based on FY 2017 PB procurement schedule; Update to delivery schedule using forecasted aircraft delivery dates; Update to flight hours based on FY 2017 PB hours
Cost Estimating Methodology	0.0	
Cost Data Update	-181.8	Update to Depot-Level Repairable and Consumable Cost Per Flight Hour based on FY 2016 pricing; Update to engine module repair prices; Update to Depot Planned Maintenance Interval (PMI) cost per event; Incorporated FY 2016 OSD inflation indices
Labor Rate	-6.3	Incorporated FY 2016 Military Composite Pay Rates
Energy Rate	14.4	Incorporated FY 2015 fuel price
Technical Input	-0.2	Update to Depot PMI schedule
Other	120.7	Corrected cost model to include all applicable costs in FY 2046; Corrected cost model so that only safety improvement modifications occur in last five years
Total Changes	246.6	
Current Estimate	16806.1	

Disposal Estimate Details

Date of Estimate: February 23, 2016

Source of Estimate: POE

Disposal/Demilitarization Total Cost (BY 2009 $M): Total costs for disposal of all Aircraft are 16.9

The estimate will be refined based on future updates to the *E-2D Deactivation, Demilitarization & Disposal (3D) Plan*.